

Appl. No. 10/603,846
Attorney Docket No.: 2003B063
Amdt. dated October 20, 2005
Reply to Restriction Requirement of September 21, 2005

Amendments to the Claims:

This listing of claims will replace all prior versions and listing of claims in this application.

Listing of Claims:

1. (Original): A process for producing olefin(s) from oxygenate(s), the process comprising the steps of:
 - (a) contacting an oxygenate feed stream with an oxygenate-to-olefin catalyst to produce an effluent stream comprising carbon dioxide, oxygenate(s), water and olefin(s);
 - (b) quenching the effluent stream to produce a quench bottoms stream comprising carbon dioxide, oxygenate(s) and water and a quenched effluent stream comprising olefin(s);
 - (c) separating carbon dioxide from the quench bottoms stream;
 - (d) separating a majority of the oxygenate(s) from a majority of the water in the quench bottoms stream; and
 - (e) combining the majority of the oxygenate(s) with the oxygenate feed stream.
2. (Original): The process of claim 1, wherein in the step of (c) separating, carbon dioxide is removed from the quench bottoms stream.
3. (Original): The process of claim 2, wherein the step of (c) separating further comprises combining an acidic composition with the quench bottoms stream.
4. (Original): The process of claim 3, wherein the acidic composition comprises an inorganic acid.
5. (Original): The process of claim 4, wherein the inorganic acid comprises an inorganic acid selected from the group consisting of hydrochloric acid, nitric acid, sulfuric acid and mixtures thereof.
6. (Original): The process of claim 3, wherein the acidic composition comprises an organic acid.
7. (Original): The process of claim 6, wherein the organic acid comprises acetic acid.

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8. (Original): The process of claim 1 further comprising separating the quench bottoms stream into a hydrocarbon phase and an aqueous phase.
9. (Original): The process of claim 8, wherein the hydrocarbon phase comprises aromatic hydrocarbons.
10. (Original): The process of claim 8, wherein the hydrocarbon phase comprises products of aldol condensation of aldehydes and/or ketones.
11. (Original): The process of claim 8, wherein the aqueous phase comprises organic acids.
12. (Original): The process of claim 8, wherein the aqueous phase comprises alcohol.
13. (Original): The process of claim 8, wherein the aqueous phase comprises catalyst fines.
14. (Original): The process of claim 1, wherein the step of (c) separating removes more than 10 wt.% of the carbon dioxide in the quench bottoms stream.
15. (Original): The process of claim 1, wherein the quench medium comprises the aqueous phase of the quench bottoms stream.
16. (Original): The process of claim 1, wherein the quench medium has a pH ranging from 7.1 to about 11.5.
17. (Original): The process of claim 1, wherein the step of (c) separating occurs at a pH ranging from about 6 to about 9.
18. (Original): A process for making polyolefin(s) from an oxygenate feed stream, the process comprising the steps of:
 - (a) contacting an oxygenate feed stream with an oxygenate-to-olefin catalyst to produce an effluent stream comprising oxygenate(s), carbon dioxide, water and olefin(s);
 - (b) quenching the effluent stream with a quench medium to produce an olefin stream comprising olefin(s), and a quench bottoms stream comprising carbon dioxide, oxygenate(s) and water;

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- (c) separating carbon dioxide from the quench bottoms stream;
- (d) separating a majority of the oxygenate(s) from a majority of the water in the quench bottoms stream;
- (e) combining the majority of the oxygenate(s) with the oxygenate feed stream; and
- (f) converting the olefin(s) to polyolefin(s).

19. (Original): The process of claim 18, wherein the step of (c) separating carbon dioxide further comprises lowering the pH of the quench bottoms stream.

20. (Original): The process of claim 19, wherein the step of (c) separating includes combining an acidic composition with the quench bottoms stream.

21. (Original): The process of claim 20, wherein the acidic composition comprises an inorganic acid.

22. (Original): The process of claim 21, wherein the inorganic acid comprises an inorganic acid selected from the group consisting of hydrochloric acid, nitric acid, sulfuric acid and mixtures thereof.

23. (Original): The process of claim 19, wherein the acidic composition comprises an organic acid.

24. (Original): The process of claim 23, wherein the organic acid comprises acetic acid.

25. (Original): The process of claim 18, further comprises separating the quench bottoms stream into a hydrocarbon phase and an aqueous phase.

26. (Original): The process of claim 25, wherein the hydrocarbon phase comprises aromatic hydrocarbons.

27. (Original): The process of claim 25, wherein the hydrocarbon phase comprises products of aldol condensation of aldehydes and/or ketones.

28. (Original): The process of claim 25, wherein the aqueous phase comprises organic acids.

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29. (Original): The process of claim 25, wherein the aqueous phase comprises alcohol.
30. The process of claim 25, wherein the aqueous phase comprises catalyst fines.
31. (Original): The process of claim 18, wherein the step of separating removes more than 10 wt.% of the carbon dioxide in the quench bottoms stream.
32. (Original): The process of claim 18, wherein the quench medium comprises the aqueous phase of the quench bottoms stream.
33. (Original): The process of claim 18, wherein the quench medium has a pH ranging from 7.1 to about 11.5.
34. (Original): An apparatus for producing olefin(s) from an oxygenate feed stream, the apparatus comprising:
- (a) a reactor having a reactor inlet and a reactor outlet;
 - (b) a quench device having a quench inlet in fluid communication with the reactor outlet, a quench overhead outlet and a quench bottoms outlet;
 - (c) a first conduit having a downstream end and an upstream end, the upstream end being in fluid communication with the quench bottoms outlet;
 - (d) a separation vessel having a first separation vessel outlet in fluid communication with the downstream end, a first separation vessel outlet and a second separation vessel outlet, wherein the separation vessel is configured to separate a mixture into a liquid component and a gaseous component and remove the gaseous component through the first vessel outlet and the liquid component through the second vessel outlet;
 - (e) a distillation column having a column inlet, an overhead column outlet and a bottoms column outlet, wherein the column inlet is in fluid communication with the second vessel outlet and the overhead column outlet is in fluid communication with the reactor inlet; and
 - (f) an acid inlet configured to introduce an acid component in the first conduit and/or the separation vessel.